JACC: ADVANCES VOL. 5, NO. 1, 2026
© 2026 THE AUTHORS. PUBLISHED BY ELSEVIER ON BEHALF OF THE AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION. THIS IS AN OPEN ACCESS ARTICLE UNDER THE CC BY-NC-ND LICENSE (http://creativecommons.org/licenses/by-nc-nd/4.0/).

BRIEF REPORT

# Management and Outcomes of Acute Pericarditis in Pregnancy

Katlin T. Schmitz, MD,[a] William R. Miranda, MD,[b] Jae K. Oh, MD,[b] Carl H. Rose, MD,[c] David S. Majdalany, MD,[b] C. Charles Jain, MD,[b] Heidi M. Connolly, MD,[b] Kathleen A. Young, MD[b]

Clinical management and outcomes of acute pericarditis (AP) in pregnancy are poorly understood with data being largely derived from small case series.[1-3] Similar to the general population, pregnant women can develop AP and require treatment during pregnancy. In most cases, the etiology of pericarditis is undefined and the process is felt to be idiopathic. The choice of therapy in pregnancy is challenging because of simultaneous intent of treating maternal disease while minimizing potential harm to the fetus. From this perspective, we sought to review the experience with AP in pregnancy at our institution.

## METHODS

Retrospective review of obstetric patients treated for AP at Mayo Clinic between May 2007 and January 2025. The diagnosis of AP required ≥2 of the following: pleuritic chest pain, pericardial rub, typical electrocardiographic features, or pericardial effusion.[4] Diagnosis and etiology were adjudicated by a cardiologist, with idiopathic pericarditis designated when no underlying cause was identified. Treatment decisions were made through multidisciplinary input and shared decision-making with the patient. Data are presented as counts (%) and medians with IQRs. Data management and basic statistical analyses were conducted using Microsoft Excel, Version 2509. The study was approved by the Mayo Clinic Institutional Review Board.

**What is the clinical question being addressed?**
What are the management approaches and outcomes of acute pericarditis diagnosed in pregnancy?

**What is the main finding?**
Acute pericarditis in pregnancy was associated with high rates of preterm delivery (43%) and recurrent pericarditis (43%).

## RESULTS

Fourteen pregnant women were diagnosed with AP during pregnancy (Table 1). Most cases were idiopathic or postviral (12, 86%), with 2 (14%) occurring secondary to systemic lupus erythematosus. Median maternal age was 30.5 (27, 33) years and body mass index of 35.5 (25.6, 38.5) kg/m$^2$. Patients presented at a median gestational age of 22 (6, 26) weeks, and 7 (50%) had a prior history of pericarditis.

Median duration of symptoms was 6 (4, 10) days. All patients presented with pleuritic chest pain, 1 (7%) had a pericardial rub, 5 (36%) had a pericardial effusion including 2 (14%) requiring pericardiocentesis with echocardiographic evidence of tamponade. Electrocardiogram findings of AP were present in 4 (29%) cases. No patient reported fevers, and 1 (7%) had an elevated high-sensitivity troponin. Elevated erythrocyte sedimentation rate was observed in 6 (43%) with a median value of 48 (41, 56) mm/h. C-reactive protein was obtained in 13 patients and was elevated in 10 (77%) with a median value of 23 (13, 61) mg/L. Echocardiographic data were

From the [a]Department of Internal Medicine, Mayo Clinic, Rochester, Minnesota, USA; [b]Department of Cardiovascular Diseases, Mayo Clinic, Rochester, Minnesota, USA; and the [c]Division of Maternal and Fetal Medicine, Mayo Clinic, Rochester, Minnesota, USA.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the Author Center.

Manuscript received September 9, 2025; revised manuscript received November 11, 2025, accepted November 14, 2025.

ISSN 2772-963X https://doi.org/10.1016/j.jacadv.2025.102428

SHOUT
SHARE
IT

**ABBREVIATIONS AND ACRONYMS**

**AP** = acute pericarditis

**NSAID** = nonsteroidal anti-inflammatory drug

available for 11 patients; left ventricular ejection fraction was normal for all.

Seven (50%) patients received treatment with nonsteroidal anti-inflammatory drugs (NSAIDs), in 5 gestational age was <20 weeks. Seven (50%) patients were treated with prednisone, including 2 (14%) who also received colchicine. Median starting dose of prednisone was 20 (14, 20) mg. Of the 7 patients treated with prednisone, 4 (57%) were ≥20 weeks gestation and 5 (71%) had a history of recurrent pericarditis. Other treatments included: anakinra (Kineret) in patient with recurrent idiopathic pericarditis, combination of colchicine and celecoxib, and colchicine monotherapy (discontinued due to patient financial restraints) in 1 patient (7%) each. Six (43%) patients had documented recurrence of pericarditis following pregnancy.

Delivery records were available for all patients; 5 (36%) had a vaginal delivery and 8 (57%) underwent cesarean delivery for obstetric indications. Median gestation at the time of delivery was 37 (34, 37) weeks and 6 (43%) were preterm deliveries prior to 37 weeks. There was 1 miscarriage at 10 weeks in a patient with ulcerative colitis on

**TABLE 1 Overview of Baseline Characteristics, Pharmacotherapy, and Maternal/Fetal Outcomes**

| Age, y | Gestation at Diagnosis, weeks | Prior Episode of Pericarditis | Etiology | Treatment | Gestation at Delivery, weeks | Mode of Delivery | Adverse Maternal Obstetric Outcome | Fetal Outcome | Recurrent Pericarditis Following Pregnancy |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 4 | No | Idiopathic | Ibuprofen 600 mg 3 times daily for 2 wks. | 29 | CD | Preeclampsia | Live birth | No |
| 30 | 10 | Yes | SLE | Prednisone increased from 5-7.5 mg daily and reduced to 5 mg after 4 wks; hydroxychloroquine was resumed at 400 mg daily. | 30 | Vaginal | PPROM, placental abruption | Live birth | No |
| 29 | 36 | Yes | Idiopathic[a] | Prednisone 20 mg daily continued until delivery (2 wks), patient then lost to follow-up. | 37 | CD | None | Live birth | Yes |
| 26 | 5 | Yes | Idiopathic | Stress-dose steroids (dose unspecified) for 5 days; aspirin 650 mg 4 times daily transitioned to indomethacin 25-50 mg 3 times daily at 6-8 wks. Prednisone 25 mg daily was initiated at 8 wks, tapered to 15 mg, and continued through pregnancy. Colchicine was briefly started but discontinued. | 37 | CD | None | Live birth, FGR | Yes |
| 32 | 10 | No | Postviral[b] | Initially treated with ibuprofen (dose unknown), then transitioned to celecoxib 200 mg and colchicine 0.6 mg daily. | 10 | - | None | Miscarriage at the time of diagnosis | Yes |
| 33 | 24 | Yes | SLE | On hydroxychloroquine 200 mg 2 times daily at baseline; indomethacin 50 mg 3 times daily added for 1 wk. | 36 | CD | None; preterm delivery due to twin gestation | Live birth, twin gestation | Yes |
| 35 | 20 | No | Idiopathic | Aspirin 650 mg 4 times daily with taper over 13 wks. | 39 | CD | Preeclampsia[c] | Live birth | No |
| 22 | 5 | No | Idiopathic | Aspirin 800 mg 3 times daily with taper over 13 wks. | 37 | Vaginal | None | Live birth | No |
| 31 | 33 | No | Idiopathic | Received stress-dose steroids (dose unknown), followed by prednisone 20 mg daily for 2 wks and tapered over 10 wks. | 39 | Vaginal | None | Live birth | No |
| 41 | 24 | Yes | Idiopathic | No treatment for acute episode, aspirin 650 mg 4 times daily recommended. | 39 | CD | None | Live birth | Yes |
| 26 | 4 | Yes | Idiopathic[d] | Prednisone 15 mg daily, increased to 20 mg daily. Reduced dose anakinra 50 mg daily resumed at 8 wks and continued the remainder of pregnancy. Prednisone tapered off over 8 wks. | 34 | Vaginal | PPROM, preeclampsia[c] | Live birth | Yes |
| 33 | 24 | No | Postviral | No treatment for acute episode, colchicine 0.6 mg 2 times daily recommended[e]. | 36 | CD | Exacerbation chronic hypertension | Live birth | No |
| 29 | 26 | No | Postviral | Prednisone 20 mg daily with taper over 7 wks and colchicine 0.5 mg daily for 3 mo. | 37 | Vaginal | Preeclampsia, gestational diabetes | Live birth, FGR | No |
| 33 | 31 | Yes | Idiopathic[f] | Baseline therapy included colchicine 0.6 mg 2 times daily and ibuprofen 200 mg 4 times daily as needed. At 20 wks, NSAIDs were replaced with prednisone 13 mg daily, increased to 20 mg at 31 wks, and continued through pregnancy with taper postpartum. | 34 | CD | None; preterm delivery due to persistent chest pain symptoms | Live birth | No |

[a]History of inflammatory arthritis. [b]History of ulcerative colitis treated with infliximab (Remicade) and 6-mercaptopurine. [c]Postpartum pre-eclampsia. [d]History of common variable immune deficiency. [e]Patient did not initiate planned course of colchicine due to medication cost. [f]History of antiphospholipid antibody syndrome and chronic thromboembolic pulmonary hypertension.

CD = cesarean delivery; FGR = fetal growth restriction; NSAID = nonsteroidal anti-inflammatory drug; PPROM = preterm premature rupture of membranes; SLE = systemic lupus erythematosus.

infliximab (Remicade) and 6-mercaptopurine who presented with cardiac tamponade/shock requiring pericardiocentesis.

Of the preterm deliveries, 4 (67%) occurred at or before 34 weeks. These included 1 patient with idiopathic pericarditis delivered at 29 weeks for preeclampsia with severe features; 1 patient with systemic lupus erythematosus delivered at 30 weeks due to preterm labor following preterm premature rupture of membranes and suspected placental abruption; 1 patient with recurrent pericarditis and common variable immune deficiency treated with anakinra (Kineret) delivered at 34 weeks due to preterm labor following preterm premature rupture of membranes; and 1 patient with antiphospholipid antibody syndrome and chronic thromboembolic pulmonary hypertension delivered at 34 weeks for persistent pericarditis-related chest pain despite steroids. Two additional preterm deliveries at 36 weeks occurred for obstetric indications including twin gestation and exacerbation of chronic hypertension. Two deliveries at 37 weeks were complicated by fetal growth restriction. Median infant birth weight for the cohort was 2,600 (1,884, 2,866) grams.

## DISCUSSION

Our cohort of patients with AP during pregnancy experienced high rates of preterm delivery (43%) and recurrent pericarditis (43%). Data examining AP in pregnancy remain limited, but the largest case series published to date studying 21 pregnancies in 14 women with recurrent idiopathic pericarditis reported a lower rate of preterm delivery (<37 weeks) at 5% with a higher rate of fetal loss (19%).[2] Another series examining 12 patients (14 pregnancies) described no fetal mortality and a mean gestational age of 37 weeks at delivery.[3] Both prior case series had a high rate of recurrent pericarditis during pregnancy and the postpartum period.[2,3] Although our results may in part reflect underlying comorbidities, they highlight the challenge and complexities which can arise with AP during pregnancy.

For management of AP in pregnancy, current expert opinion recommends NSAIDs as first-line therapy in patients presenting before 20 weeks of gestation but avoidance of such agents beyond 20 weeks due to risk of fetal ductus arteriosus closure.[1-3,5] Historically colchicine use was discouraged due to concern for teratogenicity in nonhuman data; however, more contemporary data support the safety in pregnancy.[5] In our cohort, NSAIDs and prednisone were commonly employed for treatment, though colchicine remained underutilized. Interestingly, 2 patients received a course of NSAIDs at 20 and 24 weeks without untoward consequences. While not first-line treatment for initial presentation of AP, it should be noted that the use of biologic agents (eg, anakinra) in pregnancy with recurrent AP requires a shared decision-making approach given limited safety data.[5] The variability of treatment regimens observed in our series highlights the lack of evidence-based recommendations for managing AP in pregnancy.

Lastly, optimal care for pregnant patients with AP requires a multidisciplinary Pregnancy Heart Team approach as demonstrated by many patients in this series. A Pregnancy Heart Team model should include, at minimum, a cardiologist with expertise in pericardial diseases and Maternal-Fetal Medicine specialist, with additional subspecialists involved as indicated by the patient's presentation.[5]

**LIMITATIONS.** We are a quaternary care center, which may inherently contribute to a patient population with increased burden of noncardiac disorders and might have contributed to the pregnancy-related morbidity seen in our series. In addition, some data were unavailable due to continuation of care at another institution following acute treatment.

## CONCLUSIONS

AP during pregnancy is associated with significant maternal and fetal morbidity. Although our results may in part reflect underlying comorbidities, they highlight the challenge and complexities which can arise with AP during pregnancy. NSAIDs and prednisone were commonly employed for treatment with large variability in implemented regimens and duration. The use of colchicine was infrequent. Further experience is needed to assess the safety and benefit of interleukin-1 inhibitors to manage AP during pregnancy.

## FUNDING SUPPORT AND AUTHOR DISCLOSURES

The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

**ADDRESS FOR CORRESPONDENCE:** Dr Kathleen A. Young, Department of Cardiovascular Diseases, Mayo Clinic, 200 First Street SW, Rochester, Minnesota 55905, USA. E-mail: young.kathleen1@mayo.edu. X handle: @KatieYoungMD.

## REFERENCES

**1.** Brucato A, Imazio M, Curri S, et al. Medical treatment of pericarditis during pregnancy. *Int J Cardiol*. 2010;144:413-414.

**2.** Brucato A, Pluymaekers N, Tombetti E, et al. Management of idiopathic recurrent pericarditis during pregnancy. *Int J Cardiol*. 2019;282:60-65.

**3.** Lotan D, Wasserstrum Y, Itelman E, et al. Management and outcome of acute and recurrent pericarditis during pregnancy. *Eur Heart J*. 2020;41:ehaa9452157.

**4.** Schulz-Menger J, Collini V, Gröschel J, et al. 2025 ESC guidelines for the management of myocarditis and pericarditis. *Eur Heart J*. 2025;46(40):3952-4041.

**5.** Pryor K, Tarter L, Economy K, et al. Pericarditis management in individuals contemplating pregnancy, currently pregnant, or breastfeeding. *Curr Cardiol Rep*. 2023;25(10):1103-1111.

**KEY WORDS** pericarditis, pregnancy